The rattlesnake is slow and sluggish in his movements, and prefers shelter in damp or cold weather. When intent upon prey he is less readily induced to rattle, but at other times his stroke is usually preceded by a warning. When mating during May they are more vicious than at other times. The danger from the rattlesnake's bite has been popularly over-estimated. I have observed a great many cases among the larger animals; fatal results have been the marked exception. Among horses and cattle not one case directly fatal has come within my notice.

In man, in eleven cases there were three deaths, two of which were most probably through ignorance or improper attention.

The rattlesnake is not dependent upon vision alone in detecting danger; his warning rattle may often be heard while yet he is entirely concealed, having been apprised of intrusion either by the sense of hearing or by mere tractile vibration.

In addition to the owl and the snake, there are still other dwellers in the burrows of the prairie dogs, but they are very useful little scavengers, though only beetles. Six or seven species of *Eleodes* and *Asida* are always found near the burrows, and one or two are almost peculiar to them.

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RAMBLES OF A BOTANIST IN NEW MEXICO.

BY EDWARD LEE GREENE.

II.

THE neighborhood of the old copper mines furnishes the best of ground for studying the imperfectly known and therefore very interesting sylva of the remote south-west. The number of species belonging to genera which make up forests in other countries is very considerable, and yet there is nothing in all this region which merits the name of a forest; nothing which an emigrant from "the States" would call "a piece of good timber." Of oaks, for example, there are four species, but one of which attains the dimensions of a middle-sized forest tree; this is Gambel's oak (*Quercus gambelii* Nutt.), a deciduous tree with something of the habit of the Wisconsin burr oak, but having foliage and acorns more like those of the common white oak. It grows rather sparingly in the little valleys among the higher hills, and is about the only oak of the region whose wood is good for any-

thing but fuel. Another kind of white oak common on all the hill-sides near the plains is of a low but stout habit, showing a trunk a foot or two thick but rarely attaining a height of twenty feet. Its leaves are oblong in outline, small and of a rather leathery texture, not deciduous, but remaining on the tree until the appearing of the new ones in April. Emory's oak (*Q. emoryi* Torr.) is a small but rather handsome tree. It has hitherto been erroneously classed with the white oaks, owing to the insufficient material brought in by the various explorers who had seen it; but it rarely takes rank among the blackest of the black oaks. Its bright-shining lance-shaped leaves remain green all winter, falling, like those of the species mentioned above, only when the new ones are appearing in spring. The fourth species of the genus, found away upon the summits of the Santa Ritas (*Q. hypoleuca* Engelm.), though a mere bush is very unique and pretty, with narrow laurel-like leaves which are dark and shining above, and on the under surface beautifully clothed with a fine dense-white wool. The bush is perfectly evergreen. The black walnut of the region (*Juglans rupestris* Engelm.) is a small species with nuts differing from those of its eastern congener, though the wood is quite similar; but lumbermen rarely find a trunk of this walnut large enough to be sawn into boards. The pines, with the exception of the tall yellow pine (*P. ponderosa* Dougl.) which occurs rather sparingly on the more elevated mountains, are of the dwarf nut-bearing sorts (*Pinus edulis* Engelm., and *P. chihuahua* Engelm.) called piñon by the Mexicans, of little value except for their oily and nutritious nut-like seeds. The very graceful willow-leaved cottonwood (*Populus augustifolia* James) frequents the banks of streams, makes a beautiful shade tree, is largely employed for that purpose on the streets of the young New Mexican towns, but is not otherwise very valuable. And here where oaks, pines and walnuts, the *large* trees of other countries, appear only in the shape of dwarfs, the junipers, which in other regions are usually small, develop into trees of very respectable size. It seems a favorite soil for junipers, for we meet here the leading species of the east (*J. virginiana* L.) and its ally of the Pacific coast (*J. occidentalis* Hook.), besides a fine species peculiar to the interior south-west, which is remarkably different from both (*J. pachyphlœa* Torr.). This is an oddity among junipers by having instead of the dark red very fibrous bark common to most

of them, a trunk so clothed in light ash-gray that at a little distance it looks almost precisely like the trunk of a white oak. Mexicans, much averse to the hard work of swinging an axe, never undertake the operation of cutting down even a medium sized tree of any sort; they prefer, when wood is wanted, to climb the trunk and cut off the branches; thus in the vicinity of any Mexican village among these hills, one sees instead of low stumps, trunks standing ten or fifteen feet high simply divested of their arms or branches. Where white oaks and this juniper had grown side by side it was hardly possible to distinguish between them in the absence of the branches so closely does the one imitate the other as to the appearance of the bark. I took the measurement of a vigorously growing not old-looking specimen of *Juniperus pachyphlœa* and found the circumference of its trunk, at three feet from the ground, fifteen feet and three inches. The height of the tree was a little more than forty feet. The berries of this tree are light-green with a blue bloom when mature, and are full four times the size of ordinary juniper berries. They are sweet and not unpleasant to the taste, and as an article of food seem to be greatly enjoyed by various birds and mammals, and by the Indians. Among the small trees of the region the mountain mahogany (*Cercocarpus parvifolius* Nutt.) is valuable on account of its very hard wood, for nearly all the rest of the native woods, even that of oaks, is light and brittle. The New Mexican locust (*Robinia neomexicana* Gray) is another small tree, or sometimes a mere shrub, remarkable not from any utilitarian point of view but for its great beauty when loaded with its heavy pendant racemes of rose-purple flowers. No other North American locust is so highly ornamental. But perhaps the most beautiful flowering tree of this section and of the whole south-western country is the one known to the Americans by the common name of desert willow (*Chilopsis linearis* DC.). The appellation sounds paradoxical surely, for from the ancient Hebrew poets down to the present generation, all, even superficial observers, know that the place for willows is not in deserts, but "by the water courses." And the tree in question is not indeed a willow, though the Mexicans have made the same mistake as we, for they call it the *mimbre*, which is the Spanish word for osier. But with its black bark, like that of some species of willow, and its long narrow leaves clothing slender and gracefully-

drooping boughs, it is well enough named desert willow, though it belongs technically to a very different order of trees. The catalpa of the south-east is its nearest ally. The flowers of the two trees are much alike in form and size, but those of Chilopsis are bright deep pink color with purple markings; and clustered among the willow-like foliage on branches that droop and sway with every breeze, they place the species far superior to the catalpa in point of grace and beauty. We hardly meet with it in our mountain saunterings, nor even along the banks of the Rio Mimbres, which pretty stream, flowing along the eastern base of the Santa Ritas, takes its Spanish name from the real willows which overshadow its clear and rippling waters. Only beyond the mountains on the sandy plains, though indeed in the lowest parts of them, along channeled sands where water sometimes flows after a heavy shower, do we find the shade of the branches and inhale the pleasant fragrance of the flowers of the desert willow. One cactus of the plains, which attains the dimensions of a small tree (*Opuntia arborescens* Engelm.), maintains a foothold among the rocks in the cooler, fresher region of the mountains, and in spite of its defiant aspect, armed thickly as it is with stout needle-pointed spines, it is a splendid object late in June when every branch bears at its apex a cluster of very large brilliant magenta blossoms. Another of a different genus (*Cereus fendleri* Engelm.), is a humbler tenant of the rocks, with still more beautiful flowers. Of the two species of Yucca noticed, one (*Yucca angustifolia* Pursh) merits the name of a true lily, growing as it does to the height of twelve or fifteen feet, the large panicles of nodding white lily-like flowers sometimes of themselves measuring six feet long. It is a majestic plant when in bloom, though less to be admired at other seasons, when it displays a mere branchless trunk terminating in a single tuft of long narrow leaves. In this last-named condition a group of yuccas seen at a distance on the plains has a singular likeness of a band of long-haired south-western savages, and has often been at first sight mistaken for such by travelers newly coming into these sub-tropical regions. The other member of this genus (*Y. baccata* Torr.) is of humbler growth, and its flowers are succeeded by edible fruits looking a little like bananas and having the flavor of pawpaws, together with slightly cathartic properties.

I read one day in an eastern newspaper a notice that a century

plant was about to flower in some one's conservatory in an eastern city. The plant is well known to be a native of old Mexico. I had seen many forms of it growing along the Rio Gila in Arizona, where it constitutes, together with stately yuccas and giant cacti, a marked feature of the landscape. Here, near Santa Rita del Cobre, I had in my rambles come upon several localities where a fine large form of it was abundant. In May I had observed the starting up of the flower stalks from the centres of such as were to flower this year. Now, near the end of June, I set forth one morning in the direction of the nearest locality of the plant which I had remembered, expecting to see them in bloom. My anticipations were realized after an hour's ride. On coming within sight of the mountain side where they grow, the great branching stems were visible, each branch terminating in an umbel of greenish yellow. I rode up to the nearest specimen, but was unable to reach, from the saddle, the lowest branch of the gigantic panicle. In the act of tying my horse to another of them I was surprised by the fall of an abundant shower of honey. Every one of the great mass of tubular flowers was filled with a clear, rather fetid liquid, very sweet, however, to the taste; and a jarring of the great stalk was sufficient to bring down mellifluous rain more copious than agreeable. This New Mexican species is not identical with the century plant common in cultivation, but is probably new and undescribed. During the weeks of my delightful sojourning in the Santa Ritas my favorite rambles were along the streamlets that come, I had almost said running, but rather dripping, down from among the higher peaks and ridges. The smaller of these are commonly lost among the rocks midway between their sources and the plains below; and the best of them sink into the thirsty ground as soon as they get fairly down out of the mountains. Nothing less than a great river could preserve itself and get across those sun-burnt, rainless tracts that separate the different mountain districts of the southwest. It was charming however, when among the hills, to go up several miles of some ravine where a scanty rill came trickling down. On one side, that which sloped northward, one could proceed under the shade of pines, oaks and cedars and salvias blue or scarlet-flowered, purple clematis climbing up among wild cherry bushes, and other delicate shade-loving plants peculiar to the region. On the opposite side where the slope was to the

hot sunny southward, one saw no trees, nor plants of fine or graceful habit, but only yuccas, century plants, cactus and Dasylirion, adorning with rigid and stately magnificence the otherwise almost barren rocks. On less rugged portions of these hot unshaded hills is where we look for and find various species of an interesting genus (*Dalea*) of peculiar south-western leguminous plants. Some are herbs, others shrubs, with small, *very* small ferny foliage and a profusion of yellow pink or purple corollas set usually in exquisite white-feathery calyces. Another characteristic and very abundant shrub of these ravines and hill sides is an oddity of the rose family (*Fallugia paradoxa* Torr.), in which the flower of a rose, or it might rather be called that of some large flowered raspberry, or blackberry (*Rubus*), is succeeded not by a berry of any description, but by a close tuft of dry seeds with long silky tails, much like those of a clematis, but finer and more graceful, and of a purplish hue. They are borne in great profusion and the bush is more showy in seed than in flower. But passing upward beyond where all these interesting things are found, we come to higher, more open and smoother lands at an altitude where snows are more sure to fall in winter, and showers in summer are more frequent. Here are scattered pines of larger growth, and under them grasses are abundant and the wild deer graze in safety; masses of blue lupines, with here and there a tall stalk of flame-red pentstemon (*P. barbatus* Torr.), occupy the more open grounds, while, farther upward still, the ravine narrows to a gorge a few rods wide. Here we find our streamlet a brook shaded by alders and poplars, and the dripping precipices are clad with mosses, mimuli and saxifrage, reminding the herbalist here upon the borders of Mexico of familiar scenes in far northward latitudes.

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ON THE TRANSFORMATIONS AND HABITS OF THE BLISTER-BEETLES.[1]

BY CHAS. V. RILEY, A.M., PH.D.

THE larval habits of the European Cantharis of commerce, as also those of its congeners in our own country and in other parts of the world, have hitherto remained a mystery, notwithstanding the frequency with which the beetles occur, their great

[1] Adapted by permission from the Transactions of the Academy of Science of St. Louis.